R E P O R T R E S U M E S

ED 019 836 EF 001 751

HEATING AND AIR CONDITIONING EDUCATIONAL PROGRAM.
LENNOX INDUSTRIES INC., MARSHALLTOWN, IOWA
REPORT NUMBER HAEP-671-L11
EDRS PRICE MF-$0.25 HC-$0.24 4P.

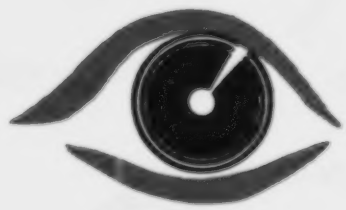
DESCRIPTORS- *AIR CONDITIONING, *EDUCATIONAL PROGRAMS, *HEATING,

INCREASED MOTIVATION, INCREASED INITIAL COMPREHENSION, AND INCREASED RETENTION ARE THE PRIME GOALS OF THE LENNOX HEATING AND AIR CONDITIONING EDUCATION PROGRAM. IT IS A COMPLETE PROGRAM WITH ALL THE TEACHING TOOLS REQUIRED TO PRODUCE A KNOWLEDGEABLE HEATING AND AIR-CONDITIONING INSTALLER OR SERVICE MAN. THIS INSTRUCTIONAL PROGRAM IS DESIGNED ESPECIALLY FOR VOCATIONAL-TECHNICAL SCHOOLS, HIGH SCHOOLS, AND POST HIGH SCHOLLS. A VARIETY OF TEACHING AIDS ARE INTEGRATED INTO THIS PROGRAM. THERE IS SOFTWARE IN THE FORM OF MANUALS WHICH COVER THE VARIOUS ASPECTS OF HEATING AND AIR CONDITIONING AND FILMS WHICH GRAPHICALLY BACK UP THE MANUALS. THE PROGRAM ALSO INCLUDES HARDWARE IN THE FORM OF HEATING AND AIR CONDITIONING EQUIPMENT, WHICH STUDENTS CAN INSTALL AND OPERATE. SEVERAL TRAINERS ARE USED TO AMPLIFY CERTAIN PORTIONS OF THE COURSE WHILE LETTING THE STUDENT BECOME INVOLVED IN THE MECHANICS. (RH)

ED019836

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.



HEATING - AIR CONDITIONING
educational program

EP 00 1 751

LENNOX

(Educational Division)

HEATING AND AIR CONDITIONING EDUCATIONAL PROGRAM

(Designed Especially for Vocational-Technical Schools, High Schools and Post-High Schools)

Increased motivation, increased initial comprehension, and increased retention are the prime goals of the Lennox Heating and Air Conditioning Educational Program. It is a complete program with all the teaching tools required to produce a knowledgeable heating and air conditioning installer or service man.

This program includes a variety of teaching aids, which are interrelated to give a total comprehensive program. There is "software" in the form of manuals which cover the various aspects of heating and air conditioning. There are films which graphically back up the manuals. There is "hardware" in the form of heating and air conditioning equipment, which students can install and operate. Several Lennox trainers are used to amplify certain portions of the course while letting the student become involved in the workings.

This Lennox educational program is designed with an interesting change of pace to keep the student alert and interested in the subject. He can become emotionally, physically, and mentally involved. He will be working and learning with the same materials he will be faced with in the business world.

PROGRAM CONTENTS

1. FILM – "THE GOOD AIR."

This film deals with the historical need for heating and air conditioning in our dwellings. It sets the stage for the student by depicting the need, development and perfection of a mechanical means that would permit man to live with the elements. This film is in colored cartoon form.

2. LOAD CALCULATING MANUALS.

There are several manuals involved in this area:

a. Load Calculation Manual

This manual contains all the heat transmission and infiltration factors need to figure the heat gain and heat loss of a structure.

b. How To Figure Load Calculation

This manual takes the student through each step of figuring heat gain and heat loss, using the factors found in the Load Calculation Manual. Forms for estimate sheets, load calculations, etc., are included.

c. Duct Calculation Manual

Duct, fitting and pipe sizing are all covered completely in the Duct Calculation Manual. At this point the student should be able to completely size the equipment and fittings for the average structure.

3. AN ACTUAL OPERATING FURNACE.

With matching coil and condensing unit.

4. HEATING AND AIR CONDITIONING INSTALLATION MANUAL.

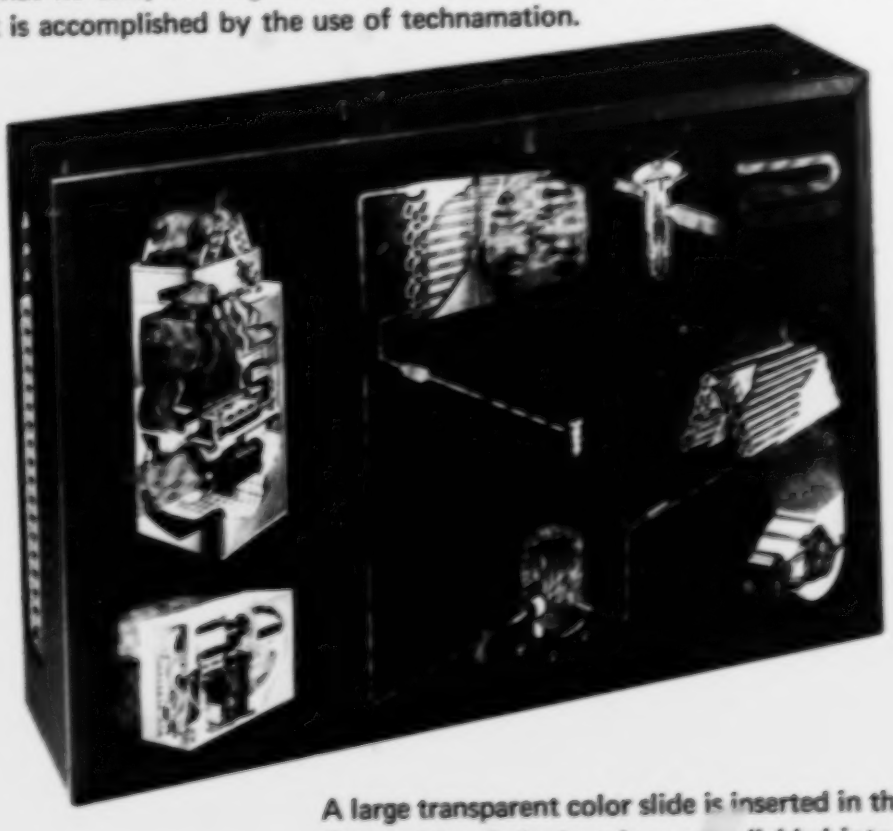
This manual is used to teach the actual equipment installation from the time it is delivered to the structure until the installer completes the job. The manual acquaints the student with the tools of his trade and how to use them. It is well illustrated, showing all the various fittings and duct necessary to make the installation. It is written in the same sequence an actual installation would be made.

5. FILM – "HEATING AND AIR CONDITIONING INSTALLATION."

The installation film augments the manual by showing two installers making a complete heating and air conditioning installation. The film stresses good working practices, methods that reduce installation time, and the use of proper tools to do the job.

6. REFRIGERATION SYSTEM TRAINER.

What happens in a refrigeration system has always been difficult for the student to grasp. It's difficult to teach the student about something he can't see. The Refrigeration System Trainer permits the student to see what's going on inside the system. The refrigerant is seen moving through the system from the evaporator coil to the compressor to the condenser and back to the evaporator. It is done in a realistic manner so the student can identify what he sees, viewing the trainer, with the actual equipment. The refrigerant movement is accomplished by the use of technamation.



How The Trainer Works –

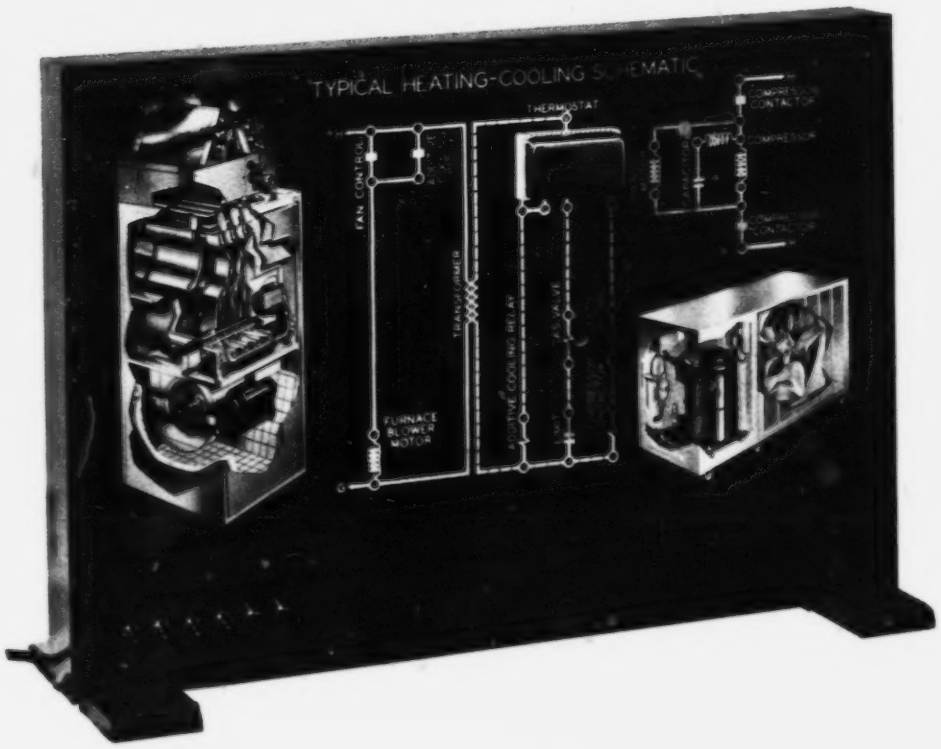
A large transparent color slide is inserted in the front of the trainer box. The inside of the box is evenly divided into eighteen separate cans or compartments approximately 6" x 8". Each compartment contains its own motor, reinforced 5" polarizing spinner, and light. A console of switches is located on the side of the box. This console will permit the operator to:

a. Turn on all lights and motors for complete Technamated viewing.
b. Turn on light only for static viewing.
c. Light any individual operation in static form.
d. Operate any individual section lighted and Technamated.
e. Operate more than one section at the same time.
f. Operate sections in any sequence.

A manual describing the refrigeration sequence in detail is included.

7. HEATING AND AIR CONDITIONING WIRING TRAINER.

With this trainer the student or teacher can actually put a heating and air conditioning system through its electrical paces. The trainer shows what happens from the time the thermostat receives a call for heating or cooling until the equipment is in operation. A console of switches permits the instructor to light up any part of the wiring schematic he desires. The student can observe how each control in the wiring circuit works and what function it has. The instructor may also introduce a malfunction of a component into the circuit and the student can see visually its effect.



8. COOLING SERVICE MANUAL.

Servicing the equipment is another phase of the educational program. This manual covers in detail the sequence used in trouble-shooting and tools used by the serviceman. It also covers fundamentals and general service procedures which are applicable to all DX refrigeration systems.

9. INSTALLATION INSTRUCTIONS.

This is a set of instructions which normally accompanies the air conditioning equipment to the job. It describes in detail how the equipment should be installed and made ready for operation.

10. FILM – "THE SEARCH FOR TOTAL COMFORT."

This film describes just what the homeowner should expect of his heating and air conditioning system.

LENNOX Industries Inc., Education Division, Department A15, Marshalltown, Iowa 50158 – Phone 515+752-5471

Form No. HAEP-671-L11 Litho USA